

in the East, who wished to try to grow them. I dug some of these plants in November, after the rains had commenced, and discovered that the root mass and little plantlet had greatly increased in size. I dug some of the staked plants early in March, and found them still progressing in growth, and others that were not dug came up and bloomed by the stakes.

My conclusions are, that *Sarcodes* is an herbaceous perennial, continuing through many years, and, by the little plantlet *always* being found *below* the older one, that it descends a little deeper into the earth each season, and this accounts for the great depth to which some of the under-ground stems penetrate.

As to the germination and infant life of *Sarcodes* I know nothing, but am satisfied that they receive their nourishment from the earth after they attain any considerable size.—MRS. R. M. AUSTIN.

New Indiana Plants.—Four species have just been added to the list of known Indiana plants, viz: *Aselepias phytolaccoides*, growing abundantly in the college grounds at Wabash College, Crawfordsville; *Habenaria orbiculata*, Avilla, Ind.; *Epilobium angustifolium*; and *Sambucus pubens*.

EDITORIAL NOTES.

PROF. BUREAU has been appointed Director of the *Jardin des Plantes* in place of the late M. Decaisne.

PROF. LUCIEN M. UNDERWOOD has been elected Professor of Geology, Zoölogy, and Botany in Syracuse University.

THE DEPARTMENT OF AGRICULTURE report for 1881-2, contains some interesting matter pertaining to bacterial subjects, illustrated with several colored and uncolored plates.

THOMAS J. HOWELL, in *Pop. Sci. Monthly*, shows that N. Am. plants can be divided into three or four distinct floras, corresponding to the different geological formations they inhabit.

EXTENSIVE PREPARATIONS are being made by the Chicago scientific public for the American Association of Microscopists, which holds its annual meeting in that city from August 7 to 10. A large attendance is anticipated.

THE LIBRARY OF PROF. J. DECAISNE, probably one of the finest in Botany, Horticulture and general Natural History sold since Jussieu's time, was sold in Paris last month. The catalogue, containing a portrait of Decaisne, and a bibliography by Bornet, covered 480 pages.

IT IS TO BE HOPED that there will be a large attendance of botanists at the A. A. S. meeting at Minneapolis, beginning August 15th. No better place for botanists could have been selected, and every moment can be made pleasant, not only in exploring new ground, but in that congenial companionship which the western worker, particularly, is denied during the greater part of the year. The biological section under Prof. Beal ought to be of great interest, and botanists should make a strong rally to its support.

THE TORREY BULLETIN'S "Contributions toward a list of the State and Local Floras of the U. S.," appears with its fourth part in the number for June, being devoted to the "Southern States." Kentucky is credited with 11 lists, Tennessee with 1, Alabama 1, Mississippi 1, Louisiana 3, Arkansas 2, Texas 5.

DR. HERMANN MULLER concludes that the flowers of *Pulmonaria officinalis* change from red to blue, as they grow older, in order to indicate to the intelligent bees (*Anthophora pilipes*, F.) which fertilize it, which flowers should be visited by them for their own and the plant's profit. One bee which he watched visited 182 red to 10 blue ones.

COL. R. H. BEDDOME has just published a hand-book of Indian ferns. It covers the same area as that included in Hooker's "Flora of British India," and includes 25 per cent. of all the known ferns. It is the first attempt to study Indian ferns in the field, and the result is most satisfactory, the species numbering 661, grouped under 98 genera. There are 300 illustrations.

P. C. SMITH, Esq., of Circleville, Ohio, gives in the *Pop. Sci. Monthly* some strong evidence in favor of the idea that the rings of growth in trees are annual rings. The evidence relates principally to oaks, and is based upon the "hacks" made by old government surveyors of known date. A counting of rings from the "hacks" out corresponds in every case to the number of years known to have elapsed.

IN HACKEL'S recent monograph of the European *Festuca* there is very careful and minute work in the grouping of forms. For instance, *F. ovina* has 9 sub-species, the first sub-species (*Eu-ovina* by name) has 8 varieties with names, the var. *vulgaris* having 5 named sub-varieties, the var. *durinsecula* 7, etc. *F. rubra* has 6 sub-species, some of which have seven varieties, and some of these as many sub-varieties.

PROF. W. C. WILLIAMSON ADDUCES (vide articles in journals) additional evidence confirmatory of Prof. A. Dickson's interpretation of the morphology of the pitchers of *Cephalotus follicularis*. His testimony seems to leave little room for doubt that the petiole of the true leaf is identical with the petiole of the pitcher, which is formed by the pouching of the leaf blade and covered by the lid, an outgrowth from the upper surface of the blade.

IN AN INTERESTING note in *Science*, Prof. N. S. Shaler discusses the function of the "knees" of the swamp cypress (*Taxodium distichum*). He concurs with the common explanation that they permit the access of air to the roots. He also considers that we have in it the case of the survival of a species owing to a peculiar habit of growth. These cypresses, when grown upon dry ground, develop no such thing as "knees," but when driven to the water these begin to develop. In this way a "peculiar organ is developed for a special purpose," and, crowded from the dry ground by the broad-leaved trees, it has sought and found safety in the swamps.

WINTER HAS some interesting notes in the May *Hedwigia* on N. American fungi. He considers *Æcidium hemisphaerium* Peck on *Mulgedium*, to belong to *Puccinia Prenanthis*; and the teleutospores of a *Puccinia*, found by A. B. Seymour in Illinois, on *Lophanthus nepetoides*, he refers to *P. verrucosa*. What is un-

doubtedly the latter species was found by the writer near Chicago a few days since on *L. scrophularicifolius*. He also advocates keeping the *Æcidium* on *Ranunculus abortivus* (*Æ. Ranunculi* Schw.) as a species separate from *Æ. Ranunculacearum* DC., which is common to many *Ranunculaceae*, and suggests that it may belong to some *Uromyces* on a monocotyledonous host.

CURRENT LITERATURE.

Supplement to the Catalogue of the Davenport Herbarium.—This brings the Fern Catalogue up to March, 1883, and contains valuable notes on various species, by Mr. George E. Davenport. Mr. Davenport also publishes a very neat and convenient Check List of N. A. Ferns, including 32 genera, 161 species, and 24 varieties.

Botanische Mikrochemie, by V. A. Poulsen, translated from the Danish by Carl Müller. pp. xvi, 83. Cassel: Theodor Fischer.—The publication by Mr. Penhallow of his "Vegetable Histology" recalls a little book by the above title, which, though published more than a year ago, has not received the attention in this country which it deserves. To every reader of German it will commend itself at once, and its German is so easily read that even a student with but a cursory knowledge of the language will find little difficulty in picking out from it much that is useful. The first part of the book is devoted to "The Microchemical Reagents and their Use." Under this head fifty reagents are named. The manner of using each and the reactions for which they are used are clearly and briefly stated. To this part is appended a few pages treating of preservative media and cements. The second part enumerates "The Plant-substances and the Method of their Detection." Forty-one substances are given, together with the reagents and methods to be used for their detection. Altogether, a more useful little book could hardly be found. It should be in every laboratory and on every working table. It is much to be hoped that some one may soon obtain the right of translating it into English, that its usefulness to English and American students may be enhanced. It is to be regretted that the only similar book in English, Penhallow's "Vegetable Histology," was so marred by the publisher, in order that it might minister to his pride in heavy paper and wide margins. Notwithstanding the fact that Poulsen's book contains twice as many pages and nearly three times as much matter, it can be sold for 3 marks instead of \$1.20. The book is an inch and a half narrower and two and a half shorter than Penhallow's, and yet the printed page is larger. Moreover it is bound as a hand-book should be, so that it will lie open at any page. We hope Mr. Penhallow will see to it that when a second edition of his book comes out it shall not sacrifice usefulness to looks.

On the Relations of Micro-Organisms to Disease, by Dr. W. T. Belfield, of Rush Medical College. Chicago, 1883. 12o., 131 pp. Illust.

Bacteria and the Germ Theory of Disease, by Dr. H. Gradle, of the Chicago Medical College. Chicago, 1883. 8o., 219 pp.

These works treat the subject in a comprehensive, careful and judicious manner. They have the merit of presenting the great mass of information on the subject, which is largely the work of foreign biologists, and consequently published in foreign languages, in a well digested and readable form. While primarily addressed to the medical fraternity, they are equally intelligible and instructive to all who are interested in the rôle of bacteria or the etiology of disease. As the works have a pathological aim, they contain no characterization of species or systematic classification. Much attention is deservedly given to methods of manipulation and the trustworthiness of observers. References to authors and their works are ample, thus facilitating the consultation of the